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RECORD OF GEOGRAPHICAL PROGRESS.

AMERICA.

Causes of Distress in the British West Indies and Guiana.—Dr. D. Morris, Assistant Director of the Royal Gardens, Kew, wrote a long report upon the economic resources of the British West Indies and Guiana, the causes of whose distress were investigated recently by the West Indies Commission. His paper formed Appendix A of the Commission's Report, and on account of its importance it has been republished, and now appears as the first number of an additional series to the Kew *Bulletin* under the title of "A Report on the Agricultural Resources and Requirements of British Guiana and the West India Islands." His long studies in these regions and his intimate acquaintance with their conditions have enabled him to produce an accurate and impartial account of them. His report, of which *Nature* printed a summary (No. 1481), is a graphic illustration of the danger to any community of entire dependence upon one industry. This is a source of danger in several ways; commercially, because any large depreciation of prices involves the whole community in suffering; agriculturally, because bad seasons or hostile tariffs may at any time plunge the entire laboring population into great distress ; and furthermore, the growth of one crop only sooner or later encourages the spread of disease and perhaps the ruin of industry.

These colonies have the area of Great Britain and Ireland, with the population of Wales. Little more than 2 per cent. of the entire area is under cultivation, and only 7 per cent. of the cultivable area. In fact, over twenty million acres are suitable for bearing crops, though only a million and a half acres are under cultivation. Guiana is the most valuable of these possessions. Its capabilities of development are almost unlimited, and yet it is one of the most distressed of the colonies. The inland districts are practically uninhabited, nine-tenths of the population clinging to the coast. The planters appear to regard every industry except sugar-growing as unworthy of their attention. Under the Dutch régime, previous to 1815, a great deal of coffee and cotton, as well as sugar, was raised, which proves that the soil is well adapted for other products, though now little is grown except sugar-cane. The soil is well adapted for rice, but it is not cultivated, and fifty million pounds of rice are imported annually to feed the coolies of India, who compose a third of the population. The United States imports bananas to the value of $10,000,000, and yet British Guiana places no fruit on the market. It is observed that in the four essentially English islands of Barbados, Antigua, St. Kitts and Nevis, sugar is the only staple, while in the islands of Dominica, St. Lucia, St. Vincent, Grenada and Tobago, occupied by people who differ in language and customs from those of the other four islands, the cultivation of sugar has given place to cacao, coffee, spices and other products. Grenada is now quite independent of sugar.

Jamaica supplies a good illustration of the wisdom of selecting a variety of marketable commodities for cultivation in addition to the staple industry. In the early part of the century sugar was practically the only product for export, and this island suffered for a long time from partial crop failure or low prices before the idea was conceived of introducing other cultural industries. Jamaica still raises much sugar, but fruit has come to the front, and in addition large quantities of coffee, cacao, allspice, ginger, etc., are raised, so that the entire failure of the sugar crop would not be nearly so disastrous in its results as it would have been a quarter of a century ago. Dr. Morris does not propose anything that would tend to hasten the end of the great sugar industry, but he recognizes the need of supplementing the staple trade by a variety of other industries. He suggests the establishment of a department of economic botany and of agricultural instruction to promote the development of the resources of these islands.

EXPEDITIONS OF THE AMERICAN MUSEUM OF NATURAL HISTORY.—The American Museum of Natural History has sent out two parties this spring to continue the ethnological studies that were in progress last year. Dr. Carl Lumholtz and an assistant have gone to Mexico, where Dr. Lumholtz had already made large collections for the Museum. The explorations this year will be confined to the northern part of Mexico, and the design is to elaborate the collections now in the Museum and fill them out where they are found wanting.

The other expedition, which will consist of Dr. Laufer and Messrs. Gerard Fowke, R. Dixon, and H. Smith, will spend a short time in British Columbia, but will devote most of its work to Alaska, particularly in the neighborhood of Bering Strait, where it will cross over to Asia and make investigations among the natives there. A number of Indians will act as guides and assist in collecting specimens, which will be shipped to this city as material for comparative study. In Alaska and Asia the members of the party will live with the natives to gain a more intimate knowledge of their every-day life and pursuits.

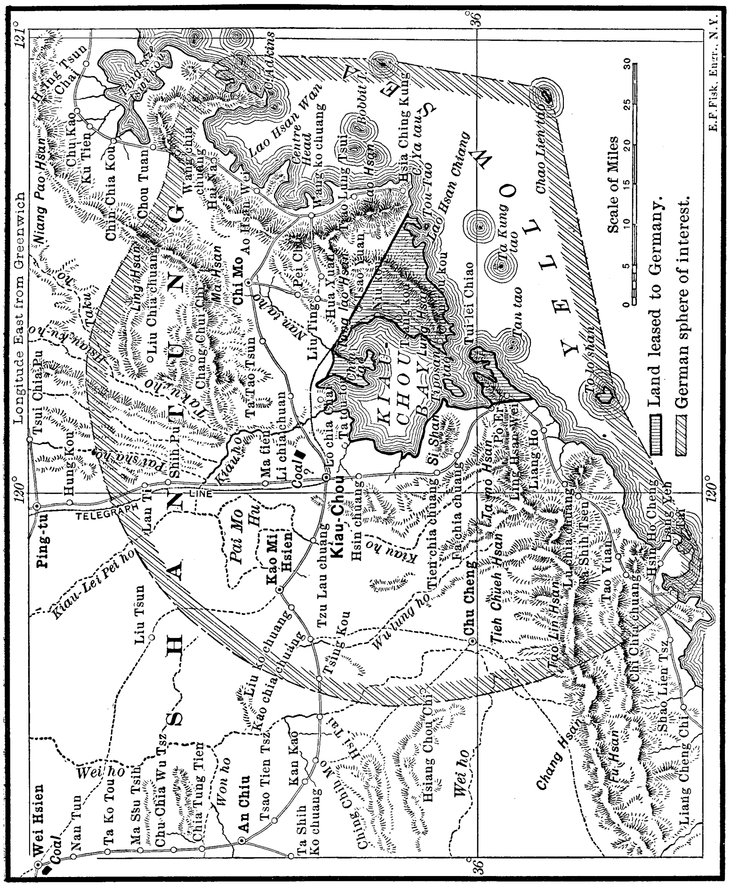
THE GOLD FIELDS OF ALASKA.—The Geological Survey has met the great demand for information concerning the gold region of Alaska by issuing a pamphlet of 44 pages, with a large map showing the routes of travel and the distribution of the gold-bearing rocks in Alaska. The pamphlet is by Mr. S. F. Emmons, and its title is "Map of Alaska, showing known gold-bearing rocks, with descriptive text containing sketches of the geography, geology, and gold deposits and routes to the gold fields." The descriptive text is based upon Dr. Dall's paper on "Coal and Lignite of Alaska," in the Seventeenth Annual Report of Survey, Becker's "Reconnaissance of the Gold Fields of Southern Alaska," and the "Geology of the Yukon Gold District, Alaska," by Spurr, both of which appear in the Eighteenth Annual Report. The pamphlet contains a brief historical introduction, with a list of works giving information about Alaska. A geographical sketch of the region follows, with a description of the rivers, the climatic conditions, and the eight routes to the Klondike gold fields that have come into general notice. The last 28 pages are given to a geological sketch of the gold regions and those where coal, lignite and metals other than gold are found. The pamphlet will be most serviceable to all who are studying the mineral resources of Alaska and the neighboring Canadian territory, or who intend to go to the gold fields.

ASIA.

THE GERMAN LEASE OF KIAU-CHOU BAY.—The accompanying map is based upon a map in *Petermanns Mitteilungen* (No. 2, 1898), from a Japanese map of Shantung. The Japanese map has a large amount of detail, and is also interesting as proof that, long before the recent war with China, Japan began to make preparations for such an event by geographical surveys in China.

The area of the leased territory is 360 square miles, of which 215 square miles are embraced by the waters of the bay. The land area of the sphere of interest is 2,790 square miles. The leased territory, under the terms of the treaty, is entirely subject to the political and legal control of Germany. Within the sphere of interest Germany is at liberty to carry out any enterprises for the commercial and industrial development of the district, including the building of railroads.

The entire coast line of China has only three great gate ways admitting to the interior. These are the mouths of the Sikiang, Yangtse, and Peiho. The great advantage of Kiau-Chou Bay is that it offers the best means for communication with one of the most densely peopled and richest parts of China by means of minor river routes, fit for a considerable junk traffic, and by railroads yet to be constructed. It affords the best harbor on the coast of north-east China, and as Prof. Von Richthofen has pointed out in his recent paper on " Kiautschou, seine Weltstellung und Voraussichtliche Bedeutung " (Berlin, Stilke, 1897), it derives additional importance from the fact that all the harbors on the coast of North China are silting up, a process which has been particularly detrimental to commerce at the mouth of the Peiho, on which is Tientsin, whose growth and importance have largely developed within the past ten



years. For three years, however, this important trade centre has been reached only by light draught coast steamers, to the great detriment of the business of the port. Along the whole coast of the gulf of Pe-Chili there is no other haven which is a gate way to the rich, thickly populated hinterland. Kiau-Chou Bay, on the other hand, is open to the interior and has the additional advantage of being free from ice at all seasons of the year. In the opinion of Prof. Von Richthofen, the coal of Shantung will be the largest article of export; but he does not think there can be a large development of the bay until it is connected with Wei Hsien and Tsi Nan, the capital of Shantung province, by rail, and eventually is pushed further west to form a junction with the great railroad from Pekin to Hankow, now projected. A railroad may be built from the bay westward along the valleys of Lai and Kiau which entirely cross Shantung. When this enterprise is carried out the trade of Chi-fu, on the north coast of Shantung, will be considerably affected, as it cannot so easily open communications with the hinterland.

Herr Otto Anz informs the editor of *Petermanns Mitteilungen* that silk culture is in a most flourishing condition in the central and southwestern parts of the province, and that this large district can supply enough raw silk for a large number of spinning mills. In this way the silk industry of Germany may be made independent of France, Italy, England and Switzerland, from which countries it now derives nearly all its raw silk. Another great industry of Shantung is the manufacture of straw braid for hat-making, in the production of which Shantung, within a few years, has surpassed the more northern province of Pe-Chili, formerly preëminent in this line.

MR. CAVENDISH'S TRAVELS IN AFRICA.—The *Geographical Journal* for April has a paper by Mr. H. S. H. Cavendish, the young Englishman who started in September, 1896, from Berbera on the Gulf of Aden and led an expedition fitted out at his own expense through Somali Land and around Lake Rudolf. He was the first Englishman to traverse this region, though much of the ground he went over has been visited by Dr. Donaldson Smith and the Italian explorer, Captain Bóttego. He accomplished the main purpose of the journey, which was to see the country to the west of Lake Rudolf, and he made some interesting discoveries. Cavendish found the west side of Lake Rudolf bordered by mountain ranges at a distance of five to thirty miles from the lake, the area between the mountains and the lake being a comparatively level plain covered in part by thick bush or spear grass, with large intervening spaces that were nothing but sand. He ascended Mount Lubur, the dominating feature and one of the landmarks west of the lake, the top of which, according to his aneroid, is 5,300 feet above the sea. At the top is a crater nearly two miles across, in which are fresh-water springs and a good growth of grass, and here the natives take refuge in time of war with their flocks and herds. To the west, as far as he could see, were great chains of mountains covered with forests. No explorer has ever visited this district, and Cavendish desired to explore in that direction, but the native guides asserted that there was absolutely no water for many days' journey, and so he relinquished the project. In view, however, of the forested condition of the district it is not at all likely that it lacks an ample water supply.

On arriving at the south end of the lake he was surprised to find that Teleki's volcano, the first active volcano discovered in Africa, had entirely disappeared and where it stood was an absolutely flat plain of lava. It was only the year before that Dr. Donaldson Smith had seen Teleki's volcano, and the natives told Cavendish that about six months before his visit Lake Rudolf overflowed, and as the waters poured towards the volcano there was a great explosion after which the water swept in where the crater had been and put out the fire. There is now no sign of the crater in that place, but a field of lava extends to the lake and a new crater has opened about three miles due south, which, when Cavendish saw it, was not over 130 feet high. Perhaps the most interesting report which Cavendish brought home was that coal exists in large quantities near the south-east extremity of Lake Stefanie. The outcrop at the point where he discovered it was several hundred yards square. Major Lugard is of the opinion that if this coal field proves to be commercially valuable it will pay to build a branch of the Mombasa-Uganda Railroad north and use the coal on the railroad and on the steamers of Lake Victoria.

Mr. Cavendish believes that the river flowing into the north end of Lake Rudolf, whose identity has so long been disputed, is no other than the Omo of Captain Cecchi which is in accordance with the views of the late Captain Bóttego, though Donaldson Smith arrived at a different conclusion. The weight of evidence now favors the belief that the Omo sends its waters to Lake Rudolf.

Cavendish had far less trouble with the natives than other travellers in that region encountered. Among the Borani Gallas, where Dr. Smith fought nearly every step of the way, Cavendish says he could go from village to village without fear of attack and could get a drink of milk anywhere, for which the natives invariably refused payment. His only serious difficulty was with the Turkana west of Rudolf, and he established friendly relations with them before he left their country.

COMPLETION OF THE CONGO RAILROAD.—A despatch telegraphed from Stanley Pool announces that the locomotive arrived on March 16 at Dolo, the terminus of the railroad at Stanley Pool. It was in March, 1890, that the first actual work on the railroad around the Lower Congo rapids was begun, and its construction has occupied just eight years. This road, which is 240 miles long, connects about ten thousand miles of navigable waters in the Upper Congo basin with the outer world, and will give to the vast interior of the Congo State commercial advantages that no other part of inner Africa is likely to possess for a long time. It is now generally admitted that Dr. Grenfell's statement is correct, that there is no part of the Congo basin that is more than a hundred miles distant from practicable steam navigation on the rivers; and with the other railroads, now projected, every part of the state, within the next ten or fifteen years, is likely to be placed within comparatively easy reach of Europe by steam communications.—(*Le Mouvement Géographique*, April 3, 1898.)

THE POLAR REGIONS.

THE BELGIAN ANTARCTIC EXPEDITION.—Dr. Frederick A. Cook of this city, who is a member of the Belgian Antarctic Expedition, wrote from Ushuaia, in the southern part of Tierra del Fuego, on December 27 last, that the *Belgica* was about to sail for the south, following the route of Captain Larsen in a general way, making the greatest southern advance possible during the Antarctic summer, and then turning out of the ice-pack to the sub-Antarctic islands of Prinz Eduard and Kerguelen and thence to Melbourne for the winter. Owing to difficulties with the crew which made it necessary to put five men ashore at Punta Arenas, where other men could not be obtained, the vessel was a little short-handed, and no attempt was likely to be made to land a winter party. If the programme has been carried out, the expedition should be heard from in Australia within a few weeks. The idea was, when Dr. Cook wrote, to recruit the expedition in Melbourne, and before the opening of the second Antarctic winter place a wintering party in Victoria Land and extend the expedition's stay to three years. The ship and the scientific *personnel* are all that need be desired.

Seeking Information of Andrée.—The Swedish Anthropological and Geographical Society has appointed Mr. J. Stadling, who accompanied Dr. Andrée to Spitzbergen in 1896, to make inquiries through Siberia for the purpose of learning if anything is known among the natives there as to the fate of the balloon. He started from Stockholm in April and may be gone till early next year.

German Plans for Antarctic Exploration.—The German Committee for South Polar research met at Leipzig, on February 19, and formulated a plan for the proposed expedition which is to start in August, 1900, under the leadership of Dr. E. Drygalski. The plan is to reach the South Polar region in the summer of that year, choose a suitable spot for wintering, carry on scientific observations at the station during the winter, and in the spring attempt to advance with sledges over the continuous Polar ice towards the Pole. In the autumn of 1901, it is proposed to follow the coast lines of the southern lands in the direction of the magnetic pole, and, if possible, to explore the west side of Victoria Land, the return being made thence through the pack-ice. The meridian of Kerguelen's Land is recommended for the advance southward, because (1) a serious attempt has never been made on that meridian; (2) its position in regard to the observatories of Melbourne and Mauritius renders it very favorable for magnetic work; (3) by this route the oceanic researches of the *Gazelle* and those of the deep-sea expedition led by Prof. Chun may be extended; (4) and the breaking up of the ice lately observed near Kerguelen's Land promises favorable conditions for the next three years. The *Geographical Journal* says that a complete programme for extended scientific observation covering the entire period spent in the Antarctic regions has been drawn up.

Is there an Antarctic Continent?—At the Royal Society meeting in London, on February 24, to discuss the "Scientific Advantages of an Antarctic Expedition," Dr. John Murray referred briefly to the theory of a large Antarctic Continent, which has received more prominence in his writings than in those of any other authority. He said that the form and structure of the flat-topped icebergs which are the most striking peculiarity of the Antarctic Ocean seem clearly to indicate that they originate on an extended land surface and have been pushed out over low-lying coasts into the sea. As these bergs are floated to the north and melt in warmer latitudes they distribute over the floor of the ocean a great quantity of glaciated rock fragments and land detritus, materials which were dredged up by the *Challenger* in considerable quantity, and show that the rocks over which the Antarctic land ice moved were gneisses, granites, mica-schists, quartziferous diorites, etc.

On the other hand, Sir Joseph Hooker said that the ice barrier which Ross traced for 300 miles probably abuts upon land and possibly on an Antarctic Continent; but to prove this was impossible on the occasion of Ross's visit, for he was not able from the crow's-nest of his ship to overlook even the upper surface of the ice. Sir Joseph saw no other method of settling this important point except by using a captive balloon, with which he hoped future expeditions would be provided.

Dr. Nansen laid stress on the importance of exploring the Antarctic land. He doubted whether Dr. Murray's theory of a continuous continent is correct; possibly there are only a number of groups of islands, but there is no doubt that the ice sheets are far more extensive than that of Greenland and the study of them would yield more important results.

GENERAL NOTES.

METEOROLOGICAL STATIONS IN THE ATLANTIC. — Since 1892, Prince Albert of Monaco has been interesting himself in the planting of meteorological stations on islands in the Atlantic. The first fruits of his work are the establishment of two stations in the Azores, one upon San Miguel, in the east, the other upon Flores about 300 miles west. The station at San Miguel is connected with Europe by cable; that at Flores is 1,200 miles from the continent, and as yet has no cable connection with the outside world, though a cable will probably unite the island with America before long. The combined observations at these two stations will enable the ports of Europe to receive information of threatening weather at sea at least fifty hours before the storms arrive at the coast. When the necessary instruments are provided important information on terrestrial magnetism and seismic movements may also be communicated.—(*Comptes rendus de l'Académie des Sciences*, t. CXXVI.)

TIDE TABLES IN THE GULF OF ST. LAWRENCE.—The Tidal Survey in the Department of Marine and Fisheries, Canada, has published, this year, for the first time, tide tables for Charlottetown, Pictou, and St. Paul Island, C. B., for 1898, with tidal differences for Northumberland Strait, and for the open gulf shore along the north coast of Prince Edward Island. These tables are based upon simultaneous observations of the tides obtained in 1896 and 1897, by means of self-registering tide gauges which were kept in continuous operation at nine places in the south-west part of the Gulf. It has been thus ascertained that the tides in this region can best be deduced from St. Paul Island, which is at the main entrance by which the tides enter the Gulf from the Atlantic.

THE ANTHROPOLOGICAL EXPEDITION TO TORRES STRAIT.—The expedition from Cambridge University, England, to Torres Strait, south of New Guinea, started on March 10, finely equipped for thorough scientific work among the natives. The party is under the leadership of Dr. A. C. Hadden, Professor of Zoology in the Royal College of Science, Dublin, and he has seven assistants, including four medical men, a part of whose work will be the hygienic and medical aspects of anthropology. Dr. Hadden will study the physical characteristics of the natives and their decorative art. Mr. S. H. Ray, the well-known authority on Oceanic languages, will study their language and phonology. A new departure will be made in practical anthropology by Drs. Rivers, MacDougall and Myers, who will study comparative psychology in the field. Special attention will also be given to native music, all the animals and plants utilized by the natives will be identified, various appliances will be employed to test acuity of vision and color blindness, several cameras will be employed, a cinematograph will record native dances and actions, and phonographic cylinders will record the languages and music.—(*The Geog. Jour.*, April, 1898.)

PHYSICAL GEOGRAPHY.—The text-book on Physical Geography which Prof. W. M. Davis, of Harvard University, is now preparing, will be published by Ginn & Co., of Boston. It will lay special stress on the relations between the earth and man in order to show how largely the progress of history, sites for settlement, natural products of rock, soil and water, lines of travel and boundary are dependent upon geographical environment. The book will be illustrated by views from nature and sketches of typical land forms by the author. Such a book is greatly needed to connect the work of the lower grades with that of the college, and even more to give a broad knowledge of geographic forms and processes to the many students who do not reach college.